REMARKS

Claims 1, 3-4, 6-11, 13-15, 19 and 23 constitute the pending claims in the present application prior to this Reply. Claims 10-11 and 13-15 are withdrawn from consideration. Claims 2, 5, 8, 12, 16-18, and 20-22 have been canceled, without prejudice. Claim 1 has been amended. New claims 24-26 have been added. The claim amendments and new claims are fully supported by the specification. No new matter has been introduced. In particular, support for new claims 24-26 can be found, for example, in claim 8 as originally pending, and in paragraph [0035] of the published application (US Publication No. 2005/0118168).

Amendment or cancellation of claims should in no way be construed as an acquiescence to any of the rejections. The amendments to the claims are being made solely to expedite prosecution of the present application. Applicants reserve the option to further prosecute the same or similar claims in the instant or in a subsequent patent application.

Applicants respectfully request reconsideration in view of the following remarks. Issues raised by the Office Action will be addressed below in the order they appear in the Office Action.

Claim Rejections Under 35 U.S.C. §112, First Paragraph - Enablement

Claims 1, 3, 4, 6-9, 19 and 23 were rejected under 35 U.S.C. §112, first paragraph, for purposes of enablement. In particular, the Examiner relies on Steinbrook, R., *NEJM* 2007, vol. 357, pages 2653-2655 ("Steinbrook") to show the unpredictability of reducing HIV infections, and the lack of *in vitro/in vivo* correlation in the field of HIV treatment. The Examiner states that because there is no evidence of guidance or directions on reducing immune response *in vivo*, and because Steinbrook teaches that using an envelope protein that binds to a receptor on CD4+ cells induced neutralizing antibodies but did not prevent HIV infection, the specification does not teach reducing immune responses to any and all conditions that induce an immune response. (See, Pages 4-5 of the Office Action.) The rejection is respectfully traversed.

Applicants respectfully disagree with the rejection. However, in an effort to expedite prosecution of the instant application, the claims have been amended and the amendments are

believed to obviate the rejection. In particular, the amended claims are directed to a method for reducing an immune response in an animal in need thereof by inhibiting an interaction between a dendritic cell and a T cell.

The claims, as amended, are now directed to treating patients who are in need of reducing an immune response, such as, for example, patients who are suffering from an autoimmune disease or an allergy. HIV-infected patients are not patients in need of reducing an immune response. On the contrary, because HIV infection leads to immuno-suppression, HIV-infected patients would need an increase of their immune response against HIV. Accordingly, the claims, as amended, do not encompass treating HIV-infected patients. *See, e.g., Jansen v. Rexall Sundown, Inc.*, 342 F.3d 1329, 1333 (Fed. Cir. 2003) (stating that "the claims' recitation of a patient or a human 'in need' gives life and meaning to the preambles' statement of purpose [because] it is a statement of the intentional purpose for which the method must be performed"); *Rapoport v. Dement*, 254 F.3d 1053 (Fed. Cir. 2001).

The instant application sets forth several examples and presents *in vitro* data derived from cell based assays demonstrating that the interaction between dendritic cells and T cells is mediated by an interaction between DC-SIGN on the surface of the dendritic cells and an ICAM receptor on the surface of the T cells. Furthermore, the application demonstrates that an anti-DC-SIGN antibody can inhibit the interaction between DC-SIGN and an ICAM receptor (see e.g., Example 2, paragraph [0100] and Figures 2A and 2C). These assays are representative of what occurs *in vivo*, i.e., there are interactions between DC-SIGN and ICAM receptors on the surface of T cells, and the interactions induce T cell proliferation and initiate immune response (see e.g., paragraph [0093] of the instant application). Therefore, the application teaches and enables reducing an immune response in an animal in need thereof by inhibiting an interaction between a dendritic cell and a T cell. A person of ordinary skill in the art, without undue experimentation or inventive skills, can make and use the claimed methods based on the *in vitro* data and other disclosure provided by the application.

In fact, scientific literature studying the interactions between dendritic cells and T cells shows that *in vitro* results are consistent with *in vivo* results in this area. For example, Ingulli, et al.,

J. Exp. Med., vol 185, 2133-2141 (1997) ("Ingulli," attached herein as Exhibit A) demonstrates that antigen-bearing dendritic cells directly interact with naive antigen-specific T cells (Ingulli, abstract). This result is consistent with *in vitro* experiments suggesting that dendritic cells are initiating APCs for T cell responses (Ingulli, page 2133, left column). In particular, Ingulli states that "[t]he capacity of individual OVA peptide-pulsed DC to simultaneously interact with many antigen-specific T cells in vivo is reminiscent of ... in vitro studies" (Ingulli, page 2138, right column). Similarly, Steinman, *Cell*, vol. 100, 491-494 (2000) ("Steinman," attached herein as Exhibit B) summarizes several *in vivo* studies that corroborated previous *in vitro* results (Steinman, page 492, right column). Thus, results from *in vitro* studies in this area are well recognized in the art as predictive of *in vivo* events.

The Examiner relies on Steinbrook as allegedly showing that applicants' *in vitro* testing results do not correlate with *in vivo* efficacy. The Examiner states that Steinbrook shows the unpredictability in the art of reducing HIV infection. However, as discussed above, the claims are directed to a method for reducing an immune response in an animal "in need thereof" by inhibiting an interaction between a dendritic cell and a T cell. HIV infected patients are not patients in need of reducing an immune response. Furthermore, Steinbrook does not discuss the correlation between *in vitro* and *in vivo* results related to inhibition of the interactions between DC-SIGN and a T cell. Accordingly, Steinbrook fails to provide any specific evidence to show that Applicants' *in vitro* testing results do not correlate with *in vivo* efficacy.

The Office bears the initial burden of setting forth a reasonable explanation as to why it believes that the scope of protection provided by the claims is not enabled by the description provided in the specification of the application (see *In re Brana*, 51 F.3d 1560, 1566 (Fed. Cir. 1995); *In re Wright*, 999 F.2d 1557, 1561-1562 (Fed. Cir. 1993)). Additionally, the Office has the burden to provide reasons for a conclusion of lack of correlation for an *in vitro* or *in vivo* animal model (see MPEP 2164.02). This burden has not been met in this case. Accordingly, the Office has not met its burden in challenging the enablement of the instant claims and therefore the rejection cannot stand and should be withdrawn.

For the reasons presented above, applicants submit that the claims fully comply with the enablement requirement under 35 U.S.C. § 112, first paragraph. Reconsideration and withdrawal of this rejection are respectfully requested.

Claim Rejections Under 35 U.S.C. §102

Claims 1, 3, 4, and 6-9 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Curtis (WO93/01820). The Examiner states that Curtis "teaches inhibiting HIV infection by administering a compound (page 8, lines 27-29) that blocks binding of HIV to the receptor," and blocking infection would reduce an immune response. (See, Page 6 of the Office Action.) Applicants respectfully disagree with the rejection.

Claims 1, 3, 4, 6, 7 and 9, as currently pending, are directed to a method for reducing an immune response in an animal in need thereof by inhibiting an interaction between a dendritic cell and a T cell, comprising administering a compound which binds to a protein with the amino acid sequence of SEQ ID NO: 2 (DC-SIGN) on the surface of a dendritic cell, wherein said compound reduces one or more interactions between a dendritic cell and a T cell. Curtis clearly fails to teach or suggest such methods.

Curtis is relied on for teaching inhibition of HIV infection by blocking the binding of HIV gp120 to DC-SIGN. As discussed in detail above, HIV-infected patients are not patients in need of reducing an immune response.

Further, scientific literature also supports that the claims, as currently pending, are directed to treating a patient population that are distinct from HIV-infected patients. For example, Steinman (Exhibit B) shows that dendritic cells have two "contrasting" functions. First, dendritic cells stimulate resting T cells to promote immunity against an antigen. Second, dendritic cells facilitate the transmission of HIV and promote immuno-suppression. *See, e.g.*, Steinman at page 494. Accordingly, Curtis is limited to blocking the binding of HIV gp120 to DC-SIGN. Curtis fails to teach or suggest a method for reducing an immune response in an animal "in need thereof" (such as, for example, patients suffering from an autoimmune disease or an allergy) by inhibiting an

interaction between a dendritic cell and a T cell. Curtis is not related to treating patients that require a reduction in their immune response.

A claim is anticipated only if each and every element of the claim is found in a single prior art reference. The Curtis reference does not teach each and every element of claims 1, 3, 4, 6, 7 and 9, as amended. Therefore, reconsideration and withdrawal of the rejection of the claims under 35 U.S.C. §102(b) is respectfully requested.

CONCLUSION

In view of the above amendment, applicants believe the pending application is in condition for allowance. Early and favorable reconsideration is respectfully solicited. The Examiner may address any questions raised by this submission to the undersigned at 617-951-7000.

Applicants believe no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-1945, under Order No. ALXN-P02-089 from which the undersigned is authorized to draw.

Dated: April 28, 2008

Respectfully submitted,

By 

Tianxin (Cynthia) Chen, Ph.D., J.D.
Registration No.: 61,193
ROPES & GRAY LLP
One International Place
Boston, Massachusetts 02110
(617) 951-7000
(617) 951-7050 (Fax)
Attorneys/Agents For Applicant